21—43.6(200) Standard for the storage and handling of anhydrous ammonia. The American National Standard Safety Requirements for the Storage and Handling of Anhydrous Ammonia, commonly referred to as ANSI K61.1-1989 revision, approved March 17, 1989, is adopted by this reference as the official requirement for the storage and handling of anhydrous ammonia, with the following exceptions:

1. Strike subrule 3.1.1 in its entirety and insert in lieu thereof the following:

3.1.1 Any person required to handle, transfer, transport, or otherwise work with ammonia shall be trained once each calendar year prior to handling to understand the properties of ammonia, to become competent in safe operating practices, and to take appropriate actions in the event of a leak or an emergency.

2. Strike subrule 3.4.1.1 in its entirety and insert in lieu thereof the following:

3.4.1.1 Two full face gas masks, each with one spare ammonia canister in a readily accessible location for use in ammonia concentrations less than the IDLH. See 2.19. A positive pressure, self-contained breathing apparatus may be substituted for the above equipment.

NOTE: A full face piece ammonia gas mask will provide effective respiratory protection in concentrations of ammonia in air that are not immediately dangerous to life or health for short periods of time. A gas mask is not recommended for respiratory protection in concentration exceeding the IDLH except for escape purposes only. Face piece fitting should be used to determine the ability of each individual gas mask wearer to obtain a satisfactory fit. If ammonia vapor is detected within the gas mask face piece, the face piece fit is improper, the ambient concentration is excessive, or the canister is exhausted, the wearer should return to fresh air immediately to take appropriate corrective measures. The life of a canister in service is controlled by many factors including the concentration of ammonia vapor to which it is exposed.

Canisters should not be opened until ready for use and should be discarded after use. Canisters should be discarded and replaced when the shelf life expiration date marked on the canister is exceeded. When canisters include an end-of-service indicator, the manufacturer's expiration instructions are to be followed. In addition to this protection, an independent air-supplied, positive pressure, self-contained breathing apparatus, approved by NIOSH/MSHA, should be used for entry into concentrations of ammonia vapor that are unknown or immediately dangerous to life or health. The American National Standard Z88.2, Practices for Respiratory Protection, should be referred to wherever respirators may be used. (13)

3. Strike subrule 5.2.1 in its entirety and insert in lieu thereof the following:

5.2.1 Containers used with systems covered in Sections 6, 9, 11, and 12 shall be made of steel or other material compatible with ammonia, and tested in accordance with the current ASME Code. An exception to the ASME Code requirements is that construction under Table UW 12 at a basic joint efficiency of under 80 percent is not authorized.

4. Strike subrule 5.2.2.1 in its entirety and insert in lieu thereof the following:

5.2.2.1 The entire container shall be postweld heat treated after completion of all welds to the shells and heads. The method employed shall be as prescribed in the ASME Code, except that the provisions for extended time at lower temperature for postweld heat treatment shall not be permitted. Welded attachments to pads may be made after postweld heat treatment [10]. Exception: Implements of husbandry will not require postweld heat treatment if they are fabricated with hot-formed heads or with cold-formed heads that have been stress relieved.

5. Strike subrule 5.2.2.2 in its entirety.

6. Strike subrule 5.2.4 in its entirety and insert in lieu thereof the following:

5.2.4 Welding for the repair or alteration of pressure-containing parts of a container shall be performed by an ASME Code certified welder. All repair or alteration shall conform insofar as possible to the ASME Code section and edition to which the container was constructed.

7. Strike subrule 5.3.4 in its entirety and insert in lieu thereof the following:

5.3.4 In the absence of a specific determination by the secretary, container locations shall comply with the following table:

	Minimum Distances (in feet or meters) from Each Container to:		
Nominal Capacity of Container (Gallons or Cubic Meters)	Line of Adjoining Property which may be built upon, Highways & Mainline of Railroad	Place of Public Assembly**	Institution Occupancy
*Over 500 to 2,000 gals	25 ft	150 ft	250 ft
Over 2,000 to 30,000 gals	50 ft	300 ft	500 ft
Over 30,000 to 100,000 gals	50 ft	450 ft	750 ft
Over 100,000 gals	50 ft	600 ft	1000 ft
Over 2 to 8 m^3	8 m	45 m	75 m
Over 8 to 110 m^3	15 m	90 m	150 m
Over 110 to 400 m^3	15 m	140 m	230 m
Over 400 m^3	15 m	180 m	300 m

*NOTE: For 500 gallons (2m^3) or less, see 5.3.1 and 5.3.3.
**"Place of Public Assembly" includes any place other than the ammonia business office in which, by public invitation, members of the public normally attend for reasons of business, entertainment, instruction or the like.

8. Insert a new subrule 5.4.2.9 to read as follows:

5.4.2.9 Recertification of Non-Refrigerated Containers and Systems Other Than DOT Containers. Containers with unreadable or missing nameplates may be recertified and have nameplates installed with the following information:

A. An identification number issued by the department.

B. The certification date.

C. The maximum allowable working pressure.

D. The wall thickness of the container shell and heads in inches or millimeters.

E. The water capacity of the container in pounds or kilograms or United States standard gallons or cubic meters (m^3) at 60 degrees Fahrenheit (15.6 degrees centigrade).

Items A through E must be determined and documented on forms provided by the department by a company that holds a valid R-stamp in compliance with the current edition of the National Board Inspection Code.

Nurse tanks and applicator tanks with unreadable or missing nameplates may be recertified and have nameplates installed by July 1, 2008.

9. Strike subrule 5.5.11 in its entirety and insert in lieu thereof the following:

5.5.11 Each liquid filling connection shall have a positive shut-off valve in conjunction with either an internal back-pressure check valve or an internal excess flow valve. Vapor connections shall have a positive shut-off valve together with an internal excess flow valve.

NOTE: The internal back-pressure check valves or internal excess flow valves shall be installed in the facility piping prior to the positive shut-off valves. These valves shall be installed so that any break will occur on the side of the transfer hose. This may be accomplished by bulkheads or equivalent anchorage, or by the use of a weakness or shear fitting or any other method designed to protect the back-pressure check valves or excess flow valves.

10. Strike subrule 5.7.6 in its entirety.

11. Strike subrule 5.8.15 in its entirety and insert in lieu thereof the following:

5.8.15 No container pressure relief device shall be used over five years after the date of installation of the pressure relief device. Records shall be maintained which identify each container and indicate the date of installation for each container pressure relief device.

12. Strike subrule 5.10.8.1 in its entirety and insert in lieu thereof the following:

5.10.8.1 By December 31, 1993, all stationary storage installations shall have an approved emergency shut-off valve installed in the liquid fixed piping of the transfer system. This requirement does not apply to lines feeding a fixed process system. When possible, the emergency shut-off valve shall be located on the discharge side of the pump. A suitable backflow check valve or properly rated

excess flow valve shall be installed in the vapor fixed piping of the transfer system. The emergency shut-off valve shall remain closed when plant is not in use. The emergency shut-off valve shall be installed in the facility piping so that any break will occur on the side of the transfer hose.

NOTE: This may be accomplished by concrete bulkheads or equivalent anchorage, or by the use of a weakness or shear fitting or any other method designed to protect the emergency shut-off valve. Such anchorage is not required for tank car unloading.

13. Add the following subrule 5.10.10:

5.10.10 Anhydrous ammonia shall be vented into an adequate supply of water. For this purpose, an adequate supply of water means ten gallons of water for each gallon of liquid ammonia or fraction thereof which is contained in the hose or vessel to be vented. Any aqueous ammonia solution resulting from the venting process shall be disposed of safely and properly.

NOTE: Ammonia vapor may be flared off when appropriate equipment is used to not allow ammonia vapor to escape unchecked into the atmosphere. This section does not apply to venting of a coupling between transfer hose and nurse tank or applicator or venting of vapor through 85 percent bleeder valve when loading a nurse tank or applicator.

14. Add the following subrule 5.10.10.1:

5.10.10.1 Anhydrous ammonia shall not be vented into the air. Each transport truck unloading point at an anhydrous ammonia storage facility shall have a valve for venting purposes installed in the piping at or near the point where the piping and hose from the transport truck are connected. Anhydrous ammonia from any transport truck hose shall be vented into an adequate supply of water. For this purpose, an adequate supply of water means ten gallons of water for each gallon of liquid ammonia or fraction thereof which could be contained in the hose. Any aqueous solution resulting from the venting process shall be disposed of safely and properly.

15. Add the following subrule 5.10.11:

5.10.11 All anhydrous ammonia storage locations shall have a permanent working platform installed at each nurse tank or applicator loading location. The working platform shall be designed to allow for connecting and disconnecting of transfer hoses without standing on equipment being loaded.

NOTE: This section does not apply to nurse tanks or applicators with a working surface designed for loading purposes.

16. Strike subrule 6.3.1.1 in its entirety and insert in lieu thereof the following:

6.3.1.1 Relief valves shall be installed in a manifold or other suitable device so that they can be replaced while the container remains pressurized. See NOTE in section 5.8.7. Containers designed with internal pressure relief systems are exempt from this requirement.

17. Strike subrule 9.7.3 in its entirety and insert in lieu thereof the following:

9.7.3 A cargo tank of 3,500 gallons or less water capacity may be unloaded into permanent storage locations meeting the requirements of 3.4.1 and 5.10.8 or into implements of husbandry meeting the requirements of 11.1 through 11.7. A cargo tank of greater than 3,500 gallons water capacity but not greater than 5,000 gallons water capacity may be unloaded at permanent storage locations meeting the requirements of 3.4.1 and 5.10.8 or into a portable application equipment container which is capable of holding the entire load. A cargo tank of greater than 5,000 gallons water capacity may only be unloaded into a permanent storage location meeting the requirements of 3.4.1 and 5.10.8 and capable of holding the entire load.

18. Strike subrule 11.6.1(1) in its entirety and insert in lieu thereof the following:

11.6.1(1) Any person required to handle, transfer, transport, or otherwise work with ammonia shall be trained once each calendar year prior to handling to understand the properties of ammonia, to become competent in safe operating practices, and to take appropriate actions in the event of a leak or an emergency.

19. Strike subrule 11.6.2.2 in its entirety.

20. Strike subrule 12.4.1(1) in its entirety and insert in lieu thereof the following:

12.4.1(1) Any person required to handle, transfer, transport, or otherwise work with ammonia shall be trained once each calendar year prior to handling to understand the properties of ammonia, to

become competent in safe operating practices, and to take appropriate actions in the event of a leak or an emergency.

This rule is intended to implement Iowa Code section 200.14.